

Name :

Note: If you wish to use such as 3×10^5 , you need to write your answer as 300000.
Fill in the correct answer in the box provided.

Boyle's Law

The initial volume of the air trapped in the cylinder of a hand pump is 650 cm^3 and its pressure is 102 kPa . The air is then slowly compressed to a volume 200 cm^3 . What is the pressure of the compressed air pump?

$$P_1 V_1 = P_2 V_2$$

$$\boxed{} \text{ Pa} \times \boxed{} \text{ cm}^3 = P_2 \times \boxed{} \text{ cm}^3$$

$$P_2 = \boxed{} \text{ Pa}$$

Charles Law

2.5 m^3 of air trapped at 30°C in an expandable cylinder is heated at constant temperature. What is the volume of the air when its temperature becomes 95°C ?

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$\frac{\boxed{} \text{ m}^3}{\boxed{} \text{ K}} = \frac{V_2}{\boxed{} \text{ K}}$$

$$V_2 = \boxed{} \text{ m}^3$$

Gay-Lussac's Law (pressure law)

The pressure and temperature of air in a container are 40°C and $1.3 \times 10^5 \text{ N m}^{-2}$ respectively. The container is heated until the temperature is 75°C . What is the final air pressure if the volume of the container is fixed?

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

$$\frac{\boxed{} \text{ Nm}^{-2}}{\boxed{} \text{ K}} = \frac{P_2}{\boxed{} \text{ K}}$$

$$P_2 = \boxed{} \text{ Nm}^{-2}$$